REMARKS

The present Amendment amends claims 1, 11, 16 and 19 and leaves claims 2-10, 12-15, 17, 18 and 20 unchanged. Therefore, the present application has pending claims 1-20.

Claims 1-8, 11 and 19 stand rejected under 35 USC §102(e) as being anticipated by Fukuzawa (U.S. Patent No. 6,529,976); and claims 1-20 stand rejected under 35 USC §103(a) as being unpatentable over Fujimoto (EP No. 1132805). These rejections are traversed for the following reasons. Applicants submit that the features of the present invention as now more clearly recited in claims 1-20 are not taught or suggested by Fukuzawa or Fujimoto whether taken individually or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw these rejections.

Amendments were made to the claims so as to more clearly describe features of the present invention not taught or suggested by taught or suggested by any of the references of record whether taken individually or in combination with each other. Particularly, amendments were made to the claims to more clearly recite that the present invention is directed to a storage system and a method implemented in a storage system, wherein the storage system is connected to a computer and another storage system including a first storage device such that the storage system provides a logical volume with corresponds to a storage device in the storage system or the another storage system transparent from the computer.

The storage system according to the present invention includes a first control section that is connected to the computer, a second control section

that includes a second storage device that stores data to be used by the computer and a cache memory and that temporarily stores data from the first control section before storing the data in the second storage device, a third control section that is connected to the another storage system which includes another cache memory for temporarily storing data before storing the data in the first storage device and an internal network that mutually connects the first control section, the second control section and the third control section.

Further, according to the present invention the first control section receives from the computer a first input/output request having first identification information indicative of the logical volume to be accessed, and selects one of the second control section or the third control section base on the first identification information, and sends a second input/output request corresponding to the first input/output request to the second control section or the third control section.

Still further, according to the present invention the first control section upon receipt of the first input/output request, judges whether a target logical volume to be accessed, identified by the first identification information, is correlated to the second storage device or correlated to the first storage device and selects an appropriate access destination to the second control section or the third control section based on the judgment.

The above described features of the present invention now more clearly recited in the claims are not taught or suggested by any of the references of record whether taken individually or in combination with each other. Particularly, the above described features of the present invention as now more clearly recited in the claims are not taught or suggested by

Fukuzawa or Fujimoto whether taken individually or in combination with each other as suggested by the Examiner.

Fukuzawa teaches a heterogeneous computer system having a host computer and a plurality of I/O subsystems wherein it is possible to backup the data stored in a memory between a host computer and I/O subsection which cannot be directly connected due to differences in access interfaces. Fukuzawa teaches, for example, two processing systems wherein processing system A is a mainframe type system and processing system B is an open type system. Fukuzawa teaches, for example, that in order to backup data from a disk in the processing system B into a magnetic tape library in the processing system A and in order to permit the processing A to access data in the processing system B, conversion must occur between the variable length record format and the fixed length record format.

There is no teaching or suggestion at any point in Fukuzawa that the apparatus therein is intended to manage the storage of data relative to logical volumes which may be correlated to different physical devices in different storage systems as in the present invention. The present invention as described, for example, on page 8, line 15 through page 9, line 7, provides a second storage system which can perform a judgment as to whether a target logical volume to be accessed is correlated to a physical device in the second storage system or correlated to a physical device in the another storage system and directs an input/output request requesting such access to the appropriate physical device of the appropriate storage system. Such features are clearly not taught or suggested by Fukuzawa.

Thus, Fukuzawa fails to teach or suggest that the first control section receives from the computer a first input/output input having first identification information indicative of the logical volume to be accessed, and selects one of the second control section or the third control section based on the first identification information, and sends a second input/output request corresponding to the first input/output request to the second control section or the third control section as recited in the claims.

Further, Fukuzawa fails to teach or suggest that the first control section upon receipt of the first input/output request judges whether a target logical volume to be accessed, identified by the first identification information, is correlated to the second storage device or correlated to the first storage device and selects an appropriate access destination to the second control section or the third control section based on the judgment as recited in the claims.

Therefore, Fukuzawa fails to teach or suggest the features of the present invention as now more clearly recited in claims 1-8, 11 and 19. Therefore, reconsideration and withdrawal of the 35 USC §102(e) rejection of claims 1-8, 11 and 19 as being anticipated by Fukuzawa is respectfully requested.

The above described deficiencies of Fukuzawa are also evident in Fujimoto. Fujimoto is merely directed to a disk array controller and method for adapting the number of the control units in a disk array controller, wherein the disk array controller includes a plurality of disk array control units for implementing data read/write operations when the disk array control units are connected to each other by various interconnections.

The structure of the disk array controllers as taught by Fujimoto can be found, for example, in paragraph [0053] and in paragraphs [0061] – [0078] thereof.

In the above described passages of Fujimoto there is absolutely no teaching or suggestion of the first, second and third control sections of the present invention as recited in the claims. According to the present invention, the first control section is connected to the computer, the second control section includes the second storage device that stores data to be used by the computer and temporarily stores data from the first control section before storing the data in the second storage device and the third control section is connected to another storage system which includes another cache memory for temporarily storing data before storing the data in the first storage device. No such teaching can be found in Fujimoto.

In fact, as clearly illustrated, for example, in Fig. 1 of Fujimoto there is no teaching or suggestion that the disk array controller is interconnected to another disk array controller of another storage system as in the present invention as recited in the claims. Fujimoto simply teaches that the disk array controller is connected to various hard disk drives and host computers. There is absolutely no teaching or suggestion in Fujimoto that the disk array controller is connected to another disk array controller of another storage system as in the present invention as recited in the claims.

Further, since there is no teaching or suggestion in Fujimoto that the disk array controller is connected to another disk array controller of another storage system, surely there is no teaching or suggestion in Fujimoto of the functions performed by the first control section as recited in the claims which

performs a judgment as to whether an input/output request is to be handled by the storage system in which the disk array controller is provided or another storage system as in the present invention as recited in the claims. No such judgment is performed in Fujimoto.

Thus, Fujimoto fails to teach or suggest a first control section that is connected to the computer, a second control section that includes a second storage device that stores data to be used by the computer and a cache memory, and that temporarily stores data from the first control section before storing the data in the second storage device and a third control section that is connected to the another storage system which includes another cache memory for temporarily storing data before storing the data in the first storage device as recited in the claims.

Further, Fujimoto fails to teach or suggest that the first control section receives from the computer a first input/output request having first identification information indicative of the logical volume to be accessed, and selects one of the second control section or the third control section based on the first identification information, and sends a second input/output request corresponding to the first input/output request to the second control or the third control section as recited in the claims.

Still further, Fujimoto fails to teach or suggest that the first control section upon receipt of the first input/output request judges whether a target logical volume to be accessed, identified by the first identification information, is correlated to the second storage device or correlated to the first storage device and selects an appropriate access destination to the second control

section or the third control second based on the judgment as recited in the claims.

Therefore, Fujimoto fails to teach or suggest the features of the present invention as now more clearly recited in claims 1-20. Accordingly, reconsideration and withdrawal of the 35 USC §103(a) rejection of claims 1-20 as being unpatentable over Fujimoto is respectfully requested.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 1-20.

In view of the foregoing amendments and remarks, applicants submit that claims 1-20 are in condition for allowance. Accordingly, early allowance of claims 1-20 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417 (ASA-5050).

Respectfully submitted,

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